

Alabama



The Alabama Department of Economic and Community Affairs' (ADECA, the state's planning and economic development agency) Natural Resources Section serves as the natural resources and environmental planning entity for the state. It has been working with GIS since the late 1970s, and with other departments and agencies adopting GIS or related technology more recently. ADECA is attempting to build an agency-wide database, although there is no staff dedicated for this purpose. Plans are underway to expand ADECA's GIS activities, to include the state's regional planning and development commissions and councils.

The director of the Department of Industrial Relations became interested in GIS during 1989. Since then, members of the director's staff have helped coordinate statewide GIS activities, including organization of an Alabama GIS/LIS Information Exchange Group early in 1990, and co-sponsorship of statewide GIS conferences. In addition, the Group initiated a Memorandum of Agreement among ten of the state's major universities to promote cooperation regarding GIS and related activities.

1 Origins of State Initiatives

Beginning GIS use in the late 1970s, the ADECA has used commercial GIS and image processing software on personal computers since 1986. Though limited resources were available during the 1980s for ADECA's GIS efforts, GIS have been used for a variety of management, planning and research activities and projects. One early GIS project was the Tennessee Tombigbee Corridor Study, initiated in the early 1980s to develop an alternative water transportation route to the Gulf of Mexico to complement the Mississippi River.

While developing GIS for its use, the Natural Resources Section also informally attempted to address and meet some agency GIS needs. These efforts included initiating an agency database that could be used by other ADECA sections, although no dedicated resources have been made available for this purpose. ADECA also initiated and sponsored a survey sent to state, federal and local agencies, utilities and academic institutions in July,

1989. This effort resulted in a report titled *Current Results of a GIS Inventory*.

Following this effort, the director of the Department of Industrial Relations (DIR) became interested in GIS because he thought GIS might be helpful in the Abandoned Mine Land Program located in DIR. Accordingly, DIR and ADECA began an informal, small pilot project to show the usefulness of GIS for surface mining applications.

Since mid-1989, DIR has volunteered to assume a coordinating role regarding statewide geographic information and GIS in Alabama. It sponsored an "Alabama GIS Conference" in November, 1989 and initiated efforts to create an interorganizational coordination group.

2 Coordination Efforts, Groups and Activities

The director of the Department of Industrial Relations (DIR) volunteered to provide staff

resources to a statewide GIS coordination effort in 1989. This initiative followed DIR's interest in GIS for agency needs. Since then, DIR has devoted staff time to help coordinate statewide geographic information and GIS activities.

Following some initial contacts by DIR, representatives of various state agencies, local governments, universities and others decided to form an informal association. The Alabama GIS/LIS Information Exchange Group began in March, 1990 and became official in May. It is considered to be temporary until a state-directed coordination effort exists. It is intended as a "grass roots" GIS coordination body which will reflect statewide GIS needs to help guide management towards achievable goals. The Group is currently composed of various representatives of local governments, regional governments, state agencies, federal agencies, universities, industry, including utilities and professional organizations, and vendors of GIS products and services. The current goal is to develop coordination at a working level and then work up in the state organization. DIR staff coordinates their activity.

One early GIS project was the Tennessee Tombigbee Corridor Study, initiated in the early 1980s to develop an alternative water transportation route to the Gulf of Mexico to complement the Mississippi River.

Alabama also has a State Mapping Advisory Committee which provides input to the U.S. Geological Survey (USGS) regarding mapping priorities. The Exchange Group provides suggestions to USGS for digital mapping needs in the state. At present, there are only about 130 digital planimetric line graphs (DLG's) completed or in progress for the state. An additional 275 quadrangles (1:24,000 scale) in 7.5 minute format were identified for updating. As funds become available, the DLG's and digital elevation models (DEMs) will be expanded to provide full coverage for the entire state. The 275 quads currently identified will complete coverage of the northern third of the state plus Mobile and Baldwin counties in the South.

The Exchange Group established a one page Charter with the purpose of facilitating an inventory and exchange of information to "address problems and identify solutions using GIS/LIS technologies." The primary goals of the Group are to inventory initiatives, databases and laws in the state; study the initiatives of other states; pro-

mote education and a spirit of cooperation; and assess current needs to more fully implement GIS/LIS in Alabama. Working groups have been established for various data categories to help build a state base map and work on issues and initiatives related to developing an appropriate state strategy. A listing of interested individuals working in the Exchange Group was developed from a survey distributed in June, 1990.

The Exchange Group sponsored the Second Annual Alabama GIS Conference held in December, 1990, with 160 attendees. The meeting included presentations by various governmental, academic and private sector speakers. Some of the working groups had their initial meetings at the Conference. The Exchange Group has also cosponsored other state GIS information exchange and educational sessions.

One of the major efforts of the Exchange Group has been to encourage the state's academic institutions to work together regarding geographic information. Accordingly, representatives of the Group met with the Alabama Commission on Higher Education (ACHE) in 1990 and provided information about GIS. The Exchange Group asked ACHE for their support to promote a coordinated approach among the universities.

Based on this effort, a memorandum of agreement (MOA) was prepared and has been signed by representatives of ten of the state's major universities. This MOA is unique among the states. Its goal is to create a synergistic effect that promotes interstate competitiveness rather than intra-state competition. The purpose of the MOA is to develop a method for "coordination, research and development, access to, and technical assistance" in the implementation and operation of geographic information and related technologies. The purpose is also to define and combine the strengths of each university, and identify the university that operates and maintains the "master library files" for various specialties related to GIS. The secondary goal of this MOA is to have the academic community help encourage state agencies to work together in a similar fashion.

3 GIS in State Government

The **Alabama Department of Economic and Community Affairs (ADECA)** is the state's planning and economic development agency. The Natural Resources Section serves as the natural resources and environment planning entity for the state. It has been developing GIS for internal use since the late 1970s. In addition, the section has been attempting to build an agency geographic

database for use by other agencies as well, although there is no dedicated staff for either purpose.

Currently, a Natural Resources Planner is assigned half-time on GIS, and serves as the ADECA coordinator for GIS but without dedicated resources. ADECA is currently using ERDAS on an IBM personal computer with two workstations. It is also obtaining pcARC/INFO.

The majority of GIS use, to date, has been for coastal management applications.

Plans are underway to develop and staff an agency-wide approach to GIS. Efforts are underway to acquire funding for this purpose. Plans include the addition of two staff and technological resources to concentrate on agency-wide database development and possibly to support other functions of ADECA. Near future plans also include funding GIS hardware and software in the state's 12 regional planning and development commissions and councils. This proposal is expected to cost approximately \$450,000. Efforts are being made to acquire federal funding to assist in this plan.

Applications

Various ADECA programs are using GIS. The majority of GIS use, to date, has been for coastal management applications. GIS is used to assist in projects for the Weeks Bay Program, the Coastal Zone Management Program, and the Flood Plain Management Program, as well as some general state planning purposes. For example, ADECA used GIS to help conduct a study for the Governor's Office on water resources management.

The Weeks Bay National Estuarine Research Reserve Program includes management of the site as provided by the National Oceanic and Atmospheric Administration (NOAA). A pilot project of the program is inventorying data resources to manage and preserve estuaries. This project, conducted in Baldwin County, is being developed as a prototype for a coastal information system to help preserve estuaries. The pilot project is being conducted with funding from the U.S. Army Corps of Engineers, and will be completed in 1991.

ADECA is working on the Gulf of Mexico Program with the U.S. Environmental Protection Agency (EPA) and other coastal states. These efforts include development of a database for the Gulf composed of data resources from various states and other sources. The Gulf Program includes the Mobile Bay Demonstration Project. A

wetlands digital database is being developed using the U.S. Fish and Wildlife Service's (FWS) National Wetlands Inventory, interpreted aerial photographs, and satellite imagery. The U.S. Army Corps of Engineers and the FWS are contributing data to the project.

ADECA funded the University of North Alabama to conduct a pilot project to assess the feasibility of developing and maintaining a county water line database. Available information on water lines in five counties was compiled in databases in both ERDAS and pcARC/INFO software.

The Tennessee Tombigbee Corridor Study was initiated in the early 1980s to develop an alternative water transportation route to the Gulf of Mexico to complement the Mississippi River. Geographic information systems were used in the effort. The project included digital data boundaries, land cover, transportation, streams, water quality, mineral resources, wildlife resources, water service areas, soils, wetlands and floodplains for 19 western Alabama counties, and some data for Mississippi, Tennessee, and Kentucky.

The **Department of Industrial Relations (DIR)** is the state employment security agency, including unemployment insurance, workmen's compensation, and employment services. In addition, DIR includes the State Programs Division which includes the Abandoned Mine Land Program, Mining Safety and Inspection, and Child Labor. DIR became interested in GIS because it was thought there might be some application in enforcing state statutes regarding surface mining and reclamation. Efforts are underway to initiate the effort, including the development of a remote sensing library at Alabama A&M University. DIR has a coordinating role regarding statewide geographic information and GIS coordination. It sponsored an "Alabama GIS Conference" in November, 1989 and in December, 1990.

The **Alabama Department of Environmental Management (ADEM)** is using GIS in its Field Operations Division and Water Division, but currently does not have an agency-wide approach to GIS. The Field Operations Division has had pcARC/INFO on a Wang 386-25 since early 1990. The original purpose of the system was to support U.S. EPA's "Superfund" programs for field operations and special projects. The Division is also planning to use GIS with ADEM's Water Division and U.S. EPA for drinking water analysis. ADEM has no dedicated staff for GIS. Funding is entirely from U.S. EPA.

ADEM's Water Division is using U.S. EPA's GIS facilities in Atlanta and does not have any

plans for developing its own system. It also has an integrated imaging system to track underground storage tanks. It is using a Wang VS and 7310 to enable 225 users to access this system. Scanners are being used to input data that monitors corrosion and detects petroleum leaks in tanks. A system for monitoring drinking water supplies is planned as well.

The **Department of Conservation and Natural Resources** is initiating GIS efforts. The Department's Land Resources Information Center has a computer-based inventory of all state-owned lands. The Department's Land Survey Division has plans to "computer model the original government survey of Alabama with all section corners being placed on the state coordinate system." This effort is presently unfunded. Plans are also underway to compile updated aerial photography of all the state parks in a computer file. The Alabama Natural Heritage program is building a database of the state's flora and fauna, and identifying locations of endangered species. The Department is using AutoCAD software.

The **Alabama Forestry Commission** has entered into a contract with the University of Alabama to work with their GIS. The Fire Protection Division is considering the use of GIS and GPS for dispatching fire suppression forces.

The **Geological Survey** has four Intergraph workstations that were installed in 1989 and 1990. The system is used to create computer generated maps showing the location of oil and gas wells and fields for the state Oil and Gas Board. The director of the Geocartography Division is leading the Survey's use of the system.

The **Department of Revenue's** Ad Valorem Tax Division has an Intergraph system that was initiated in 1990 for ownership tax mapping. Initial digitizing efforts are underway in Claburne, Mobile, Tuscaloosa, and Madison Counties.

The **Alabama Emergency Management Agency** is considering use of GIS in managing natural disasters and emergency situations. The agency is working with the Federal Emergency Management Agency (FEMA) on an initial project using GIS to help in the transportation and disposal of chemical munitions. This project is being assisted by the state's Data Systems Management Division in the Department of Finance to help develop a request for proposals for the agency to use GIS.

The **Alabama Highway Department** has an Intergraph system for computer aided design and drafting. It is digitizing 1:24,000 scale quadrangle sheets for one-sixth of the state, but according to the department, "at the present time GIS is very limited." The Highway Department has been using GPS since 1989 for control point monumentation, and is considering potential linkages

between GIS and GPS. It is administering a project funded by the U.S. Department of Transportation to assess the current transportation needs and provide planning information for the Northwest Alabama Transit Association, under the Northwest Alabama Council of Local Governments.

The **Legislative Reapportionment Task Force** is using Public Systems Associates, Inc. software on three Digital Vaxstation 3100s. This effort was initiated in 1988 for legislative and congressional redistricting. The effort is in cooperation with county commissions and the U.S. Census Bureau, using Census TIGER files and voting precincts boundaries, registered voters and election returns. Plans are to provide support and access to the reapportionment system to local communities to assist them with redistricting after the completion of the state's reapportionment work.

Academic Activities

The major universities in the state are working with state government in GIS as members of the Alabama GIS/LIS Information Exchange Group. In addition, representatives of these institutions signed a Memorandum of Agreement to improve coordination, research and development, access to, and technical assistance in the implementation and operation of GIS, land information systems, remote sensing, photogrammetry, digital image processing, automated cartography and relational databases.

Alabama A & M University has the Alabama Center for Applications of Remote Sensing (ACARS) laboratory to meet the teaching and research missions of the Department of Plant and Soil Science in the School of Agriculture and Home Economics, and the Departments of Geography and Political Science. The Center has eight staff and students, with an annual budget of \$225,000. It is using Intergraph and ERDAS software. Courses and specialized workshops are offered in GIS and remote sensing, with efforts underway since 1976. ACARS is attempting to establish a statewide remote sensing library and is planning to purchase statewide satellite imagery that can be made available for public sector use. This project is being coordinated with the Exchange Group.

Auburn University is involved with numerous activities in the area of remote sensing, GIS instruction, and applied work using GIS. The Department of Geography will offer courses in remote sensing/image interpretation and computerized GIS. The Department is rapidly becoming involved in overseas GIS development work. In the near future, department faculty will conduct a feasibility study for the Ministry of Agriculture in Guatemala. This project will stress

land use mapping, harvest estimates and environmental protection and will have a training component. Auburn University plans to use GIS and environmental study expertise in the Maya Resource Management Project in Guatemala and possibly Brazil. Locally, the Department will also receive some USDA funds for kudzu interpretation and area measurement. The Department has a Delta Data Systems package.

Jacksonville State University's Department of Geography began working with GIS in 1989. It is using ERDAS, MapInfo, MAP, and other software for individual projects, including a map for Calhoun County's emergency phone number (911) usage.

The **University of Alabama's** Geography Department provides the only state university graduate program with GIS courses. The Department has an Intergraph system and is conducting automated mapping projects for tax mapping in local governments.

The **University of North Alabama** maintains the Geographic Research Center in the Geography Department. It is working with the Northwest Alabama Council of Local Governments, the Department of Economic and Community Affairs and the Highway Department to use GIS to support economic development activities. As part of this effort, university representatives have assisted in developing a regional transportation study, regional water resources study, regional utilities availability study and a comprehensive plan for three counties, Colbert, Franklin and Lauderdale Counties. The University is also working to develop an inventory of digital data. It is using ERDAS and ARC/INFO on personal computers. It is one of the primary undergraduate schools in the state for GIS.

The following universities are in the process of developing courses or considering offering additional GIS courses: Auburn University of Montgomery, Samford University, Troy State University, University of Alabama at Huntsville, University of Alabama at Birmingham, and the University of South Alabama. In addition, the Alabama Center for Advanced Technology Transfer in Huntsville and the Alabama Center for Information Systems Training in Montgomery are exploring programs for instruction in GIS.

for the coordination, research and development, access to, and technical assistance in the implementation and operation of GIS and land information systems, among Universities in the State of Alabama, Spring, 1991.

*The Alabama Center for
Applications of Remote Sensing
is attempting to establish a
statewide remote sensing library
and is planning to purchase
statewide satellite imagery
that can be made available
for public sector use.*

This Memorandum of Agreement (MOA) was initiated by the Alabama GIS/LIS Information Exchange Group and signed by representatives of ten of the state's major universities to help initiate and build a statewide university level program that combines the strengths of each university. The scope of the MOA is GIS, land information systems, remote sensing, photogrammetry, digital image processing, automated cartography, and relational data bases. It states that each university may have a primary area of specialization that is included in the MOA, but other universities are not limited from "excelling in that specialty." The purpose of the MOA is to acknowledge agreement among the institutions, and identify the university that "operates and maintains the master library files in that specialty." The goal is to generate a "synergistic effect that promotes inter-state competitiveness rather than intra-state competition." The MOA provides for development of joint basic and applied projects, educational programs, technical assistance and technology transfer efforts, shared participation of faculty and staff in training functions and exchange programs with or without state agencies, and exchange of data and technology.

Report

GIS Survey Results, Ainsworth, Ralph, Alabama Department of Economic and Community Affairs, October, 1989.

The Alabama Department of Economic and Community Affairs sponsored a survey sent to state, federal and local agencies, utilities and academic institutions in July, 1989. It includes descriptions of current and planned hardware, software and peripherals; data resources; applications; data needs; contacts and interests in statewide coordination.

4 Documents List

Memorandum of Agreement

Memorandum of Agreement regarding the establishment of an effective and efficient method

Document Excerpts

**ALABAMA GIS/LIS
INFORMATION EXCHANGE GROUP
MEMORANDUM OF AGREEMENT**

Between

Alabama A & M University
Auburn University
Auburn University at Montgomery
Jacksonville State University
Samford University
Troy State University
University of Alabama at Birmingham
University of Alabama at Huntsville
University of North Alabama
University of South Alabama

Relating to

THE ESTABLISHMENT OF AN EFFECTIVE AND EFFICIENT METHOD FOR THE COORDINATION, RESEARCH AND DEVELOPMENT, ACCESS TO, AND TECHNICAL ASSISTANCE IN THE IMPLEMENTATION AND OPERATION OF GEOGRAPHIC INFORMATION SYSTEMS AND LAND INFORMATION SYSTEMS (GIS/LIS).

A. This Memorandum of Agreement is undertaken to build a statewide university level program that combines the strengths of each university to identify the state of Alabama as the nation's leading location for the best in GIS/LIS education. Each university may have a primary area of specialization as identified below. This is not to limit other universities from also excelling in that specialty. It is to identify the university that operates and maintains the master library files in that specialty. The goal is to generate a synergistic effect that promotes inter-state competitiveness rather than intra-state competition.

Alabama A & M University—Alabama Center for Applications of Remote Sensing
Auburn University—Center for Soil Conservation/International GIS Applications
Auburn University at Montgomery—Center for Demographic and Cultural Research
Jacksonville State University—Center for Geographic Information Services
Samford University—Alabama Center for Urban Planning Applications
Troy State University—Center for Environmental Research and Service
University of Alabama at Birmingham—Alabama Center for Urban Affairs
University of Alabama at Huntsville—Atmospheric & Environmental Science
University of North Alabama—Geographic Research Center
University of South Alabama—Center for Geographic Training and Research

B. Recognizing their mutual interests in geographic information systems, land information systems, remote sensing, photogrammetry, digital image processing, automated cartography, and relational data bases, the universities hereby agree to cooperate in such manner that each may benefit from the others strengths, and that programs of all institutions will be significantly enhanced. Such cooperation may entail, but will not be limited to:

1. Development of joint basic and applied projects (which may involve proposals to third parties), technical assistance and technology transfer efforts;
2. Participation of faculty and staff in training functions and exchange programs;
3. Enhancement of training opportunities for students (e.g., internships, thesis research, exchange programs);
4. Development of joint efforts with state agencies and departments, private enterprise, and others to assist in commercialization of GIS/LIS technologies and applications;
5. Exchange of data, information and software which is not protected by proprietary agreements with a third party;
6. Use of facilities, hardware, software, and telecommunication links;
7. Consulting; and
8. Co-sponsorship of meetings, seminars, workshops, and colloquia.

C. Cooperation among universities will be specifically directed towards enhancement of the efforts each institution is making to:

1. Advance the state-of-the-art via development of new and improved techniques of data collection, data analysis, data display and applications.
2. Assist public agencies, private enterprise, and academic community in employing GIS/LIS technology to promote and better manage economic development and growth, natural resources, protect environmental quality, advance, agricultural development, and deal with other pressing land management issues.
3. It is apparent to all parties that their mutual interest are best served by minimizing costs for exchange of data, information and services, and for other forms of cooperation. Therefore, it is agreed that, when compensation is required, every effort will be made to identify means and amounts of such compensation (including contribution of in-kind or compensatory services) which best serve the interest of each institution and the advancement of their shared objectives. No financial commitments are established initially in this agreement.

D. In order to facilitate and promote cooperative efforts each university will appoint one person to serve as a coordinator and the point-of-contact at their respective institution. Responsibilities of these coordinators will include:

1. Providing assistance to faculty, scientific staff, and students in identifying opportunities for, and initiating, cooperative work;
2. Tracking on-going cooperative efforts; and
3. Sharing responsibility for scheduling regular (at least semi-annual) meetings during which cooperative efforts conducted under guidelines of this agreement can be reviewed and evaluated, future activities can be planned, and results of in-progress or completed work can be reported. An annual report of activities under this agreement will be prepared jointly by the coordinators and submitted to each university president.

E. This agreement will commence upon the date of signature by representatives of each institution. The agreement will have a continuing duration. Any party may terminate this agreement by providing the other parties with four (4) months advance written notice. Any such termination shall be without prejudice to the rights which have accrued under this agreement to any party up to the date of such termination. Modifications to this agreement may be made at any time, but will require consent of all parties.